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Synchronous-Asynchronous Communications Board

TEXAS INSTRUMENTS

Texas Instruments Professional Computer

Synchronous-Asynchronous Communications Board
TI Part No. 2223206-0001
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Preface

This manual provides the user or technician with information necessary for installing and using the Synchronous-Asynchronous Communications (Sync-Async Comm) Board option. After the option has been installed, you should file this manual in Chapter 5 of your *Texas Instruments Professional Computer Operating Instructions* (TI Part No. 2223116-0001). You can also find a copy of this and all other option manuals in Appendix C of the *Texas Instruments Professional Computer Maintenance Handbook* (TI Part No. 2223200-0001).

This manual is divided into three chapters.

Chapter 1 describes the option, lists the tools required for installation and removal, and provides a checklist in case of difficulties.

Chapter 2 contains step-by-step instructions for installing the option and describes the checkout procedure.

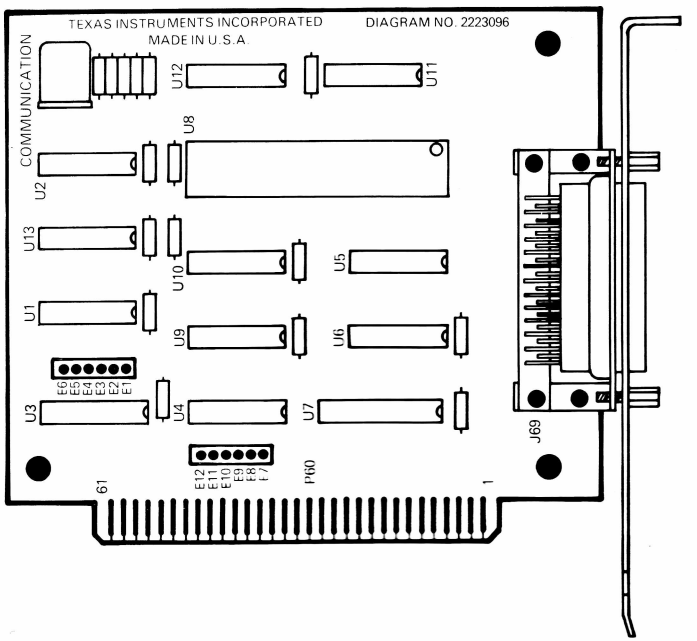
Chapter 3 discusses the procedures for removing the option.

Contents

1

Introduction

This chapter describes the sync-async comm board option, provides part number information for the option kit and kit components, and lists the tools required for installing the option.



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The sync-async comm board option supports several communications protocols, and is capable of operation over a wide range of baud rates. Each sync-async comm board may be set (using jumpers) to a different port address. This allows up to four option boards to be used on a single system.

The sync-async comm board provides a standard RS-232-C interface that allows your computer a generalized means of communication with some external device.

The term RS-232-C refers to a specific Electronic Industries Association (EIA) standard which defines the most widely accepted method for interfacing data terminal equipment with data communications equipment, by employing serial binary data interchange. This standard defines electrical signal characteristics, timing and control circuits, and the standard interfaces for selected communication system configurations. The RS-232-C interface is a universally used standard. Most video terminals, modems, line printers, card readers, and minicomputers utilize this standard for the interchange of data between devices.

This option provides the necessary conventions concerning data identification, transmission rates, send-receive sequences, error-checking methods, and so on. It does not provide the special programming that is necessary to use a particular external device or system.

This means that simply having the installed sync-async comm board does not automatically enable you to send programs from one computer to another or to output data to a serial printer via the interface. To perform these functions, you must acquire the special programs that are required. Communications applications programs (such as the optional TTY Communications package) are available from your Texas Instruments Authorized Dealer.

The installation of the sync-async comm board opens up a new world of communications compatibility. Your computer can now be programmed to communicate with a telephone modem, a serial printer, a data terminal — almost any RS-232-C device.

The sync-async comm board option supports asynchronous speeds which are selectable from as slow as 50 bits per second to as fast as 19 200 bits per second. Most synchronous data communication protocols, including synchronous data-link control (SDLC) and high-level data-link control (HDLC), are supported by this option.

PURPOSE

The computer recognizes any one of four separate interrupts and addresses for use with the sync-async comm board. This allows up to four separately addressable comm boards to be installed in your system. No two sync-async comm boards may share the same interrupt or address.

DESCRIPTION

The sync-async comm board option kit consists of a printed wiring board and an option manual.

TI Part Numbers for the sync-async comm board kit are:

TI Part No.	Description
2223238-0001	Option Kit, Sync-Async Comm Board
consisting of:	
2223094-0001	Sync-Async Comm Board
2223206-0001	Option Manual, Sync-Async Comm Board

TOOL REQUIREMENTS

- Medium-size flat-bladed screwdriver
- 1/4-in nutdriver (optional tool for installing the option board retaining screw)

IN CASE YOU HAVE PROBLEMS . . .

If you have any operating difficulty after installing the option, you should check for the following conditions.

- Improper seating of the option board in its socket
- Loose connectors, or improper cable hookup
- Another option which you may have loosened from its socket
- Improper cable connecting an external device to the RS-232-C port
- Improperly configured, or faulty external device connected to RS-232-C port

Installation

PRELIMINARY STEPS

Before attempting to install this option, complete the following steps.

1. Be sure there is sufficient working space available. You will be turning the system unit to gain access to the back panel, and you will need space beside the system unit (with the cover removed) to place the display unit temporarily for installation checkout.

2. Make certain your Texas Instruments Professional Computer is operational. This may be done in the following manner.

   - Insert a diagnostics diskette in the left drive and close the door.
   - Place the system unit ON/OFF switch in the ON position (the self-test will be executed and the diagnostics menu will be displayed).
   - Select the Overall Unit Test and follow the procedures outlined in the *Texas Instruments Professional Computer Operating Instructions.*

   Do not attempt to install this option unless this test is successfully completed.

3. Place the system unit ON/OFF switch in the OFF position, and remove the system unit power cord from the ac receptacle.

4. Disconnect the following:

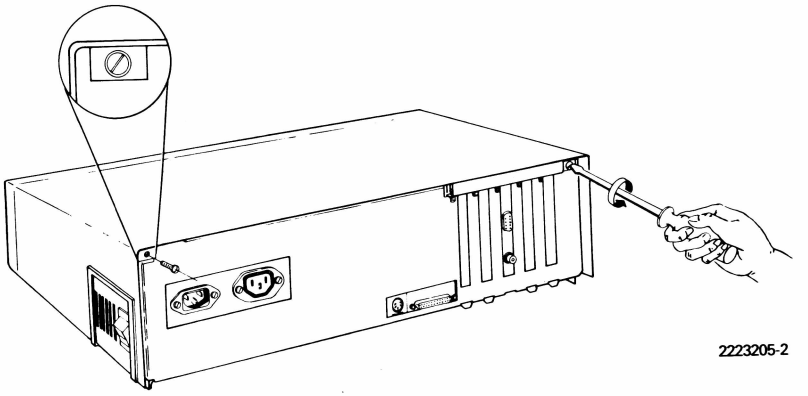
   - Keyboard cable
   - Display unit signal cable
   - Display unit power cord
   - System unit power cord
   - Any peripheral cables connected to the system unit

5. Remove the display unit from the top of the system unit and set it to the side. Set the keyboard and any additional equipment to the side, away from the system unit.

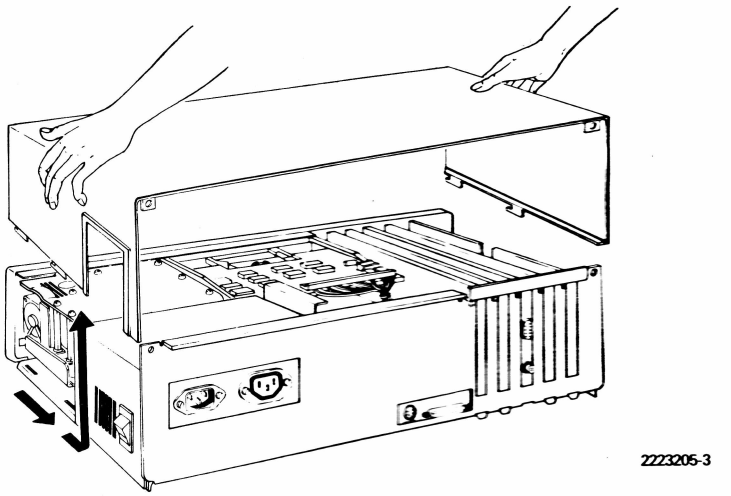
CAUTION

Static electricity can be destructive to static-sensitive components, mounted on the sync-async comm board. Before touching any of the printed wiring boards, be sure you are discharged of static electricity. This can be accomplished by momentarily touching any grounded object, or a metal-framed desk or table. Care must be used in handling the sync-async comm board. We recommend that the board assembly be left IN THE ANTISTATIC PACKING BAG until you are ready to install it.

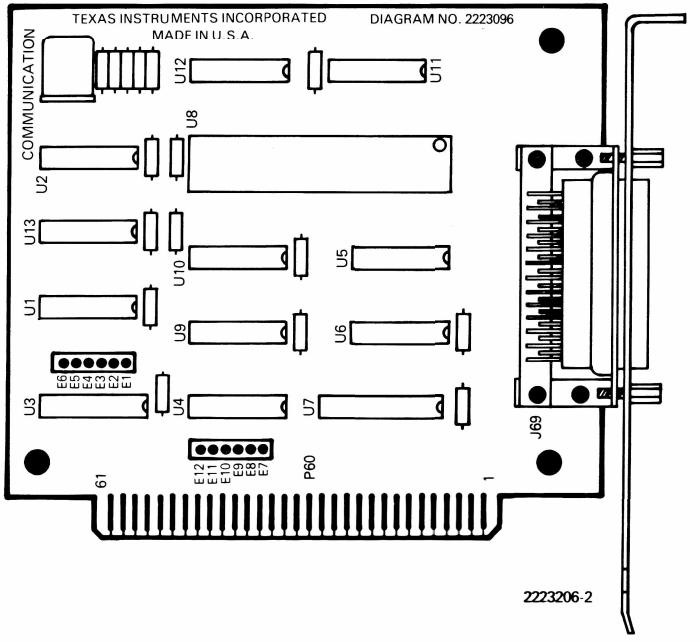
6. Turn the system unit so that the back panel is facing you. Remove one screw from each top corner using a flat-bladed screwdriver. See the following figure for the locations of these screws.



7. Remove the system unit cover by pulling it back approximately 13 mm (0.5 in), and then lifting it away from the system unit. Set the cover aside, out of the way.



8. Remove the sync-async comm board from its antistatic bag. Place the board on a smooth work surface, component side up. Study the following figure and table to familiarize yourself with the jumper locations for the various port assignments. The board is factory preset with jumpers E1 to E2 and E7 to E8, port 1 selected.

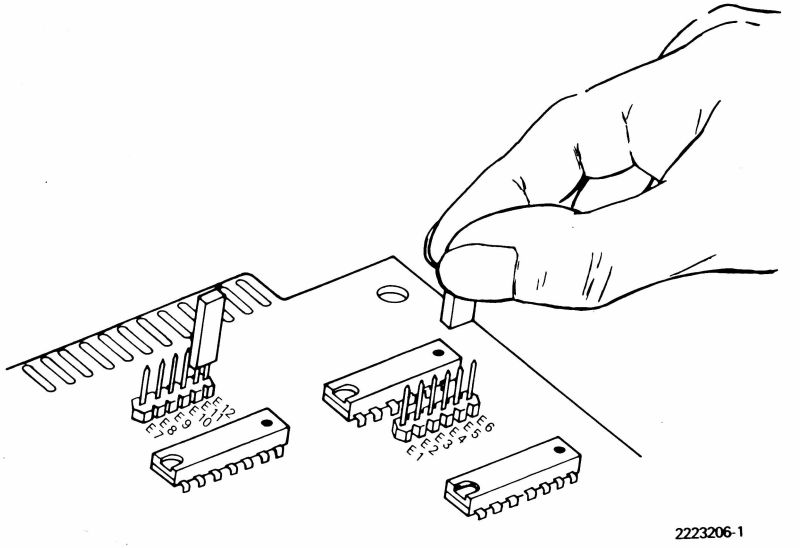


Jumper Assignments

Port No.	Address Jumpers		Interrupt Jumpers
1*	E1 to E2	and	E7 to E8
2	E4 to E5	and	E10 to E11
3	E2 to E3	and	E8 to E9
4	E5 to E6	and	E11 to E12

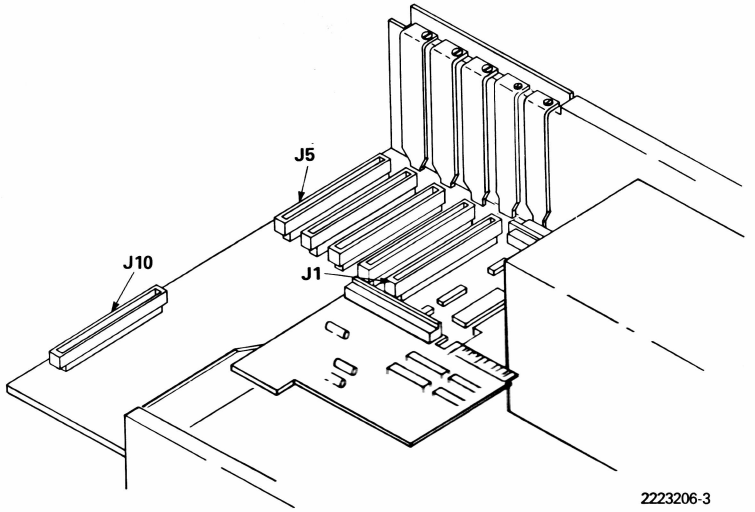
* Factory setting

9. Install the programming jumpers as shown in the following figure. This figure illustrates the proper jumpering locations for port 4.

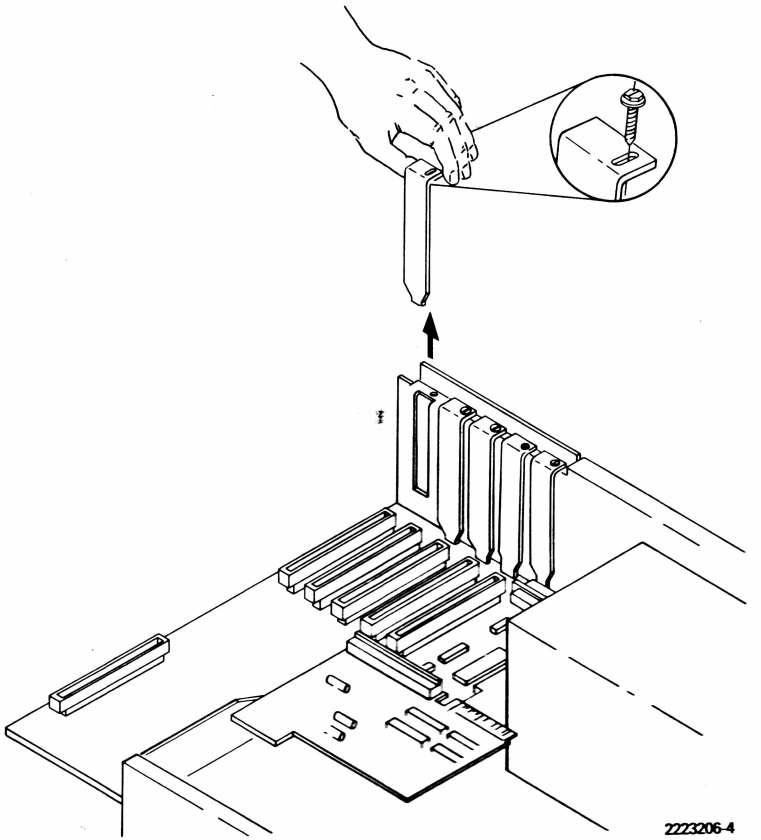


INSTALLATION PROCEDURE

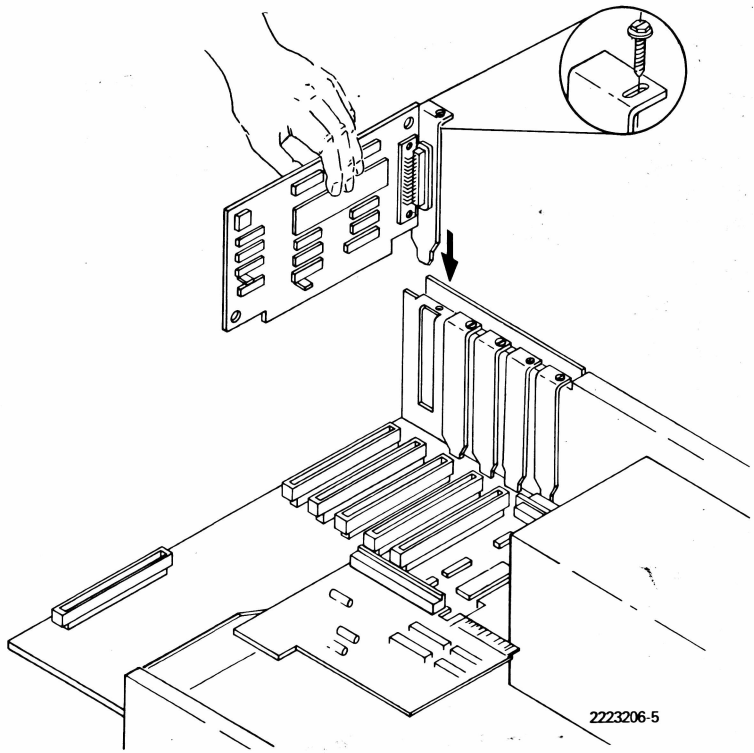
1. Due to the compact size of the option board, we recommend that position J5 be used for the first option board. This allows the clearance necessary for the future installation of an expansion RAM option board at J10 (directly to the front of J5), and avoids the need for relocating boards later. Additional boards may be installed in any option slot, J1 to J4.



2. Using a flat-bladed screwdriver or 1/4-in nutdriver, remove the screw which secures the selected blank option plate to the back panel of the system unit. Remove the option plate and store it for possible future use. The screw must be saved for use in step 4.



3. Gently insert the sync-async comm board into card-edge connector J5 on the system unit board. Use the slot on the rear of the system unit chassis to align the board during insertion. The locations of the connector and slot are shown below.



4. Align the hole on the back plate of the option board with the corresponding hole on the back panel of the system unit. Install the screw removed in step 2 and tighten, using a flat-bladed screwdriver or a 1/4-in nutdriver.

INSTALLATION CHECKOUT

Before replacing the system unit cover, check the installation one more time, and plug everything in for an operational check.

CAUTION

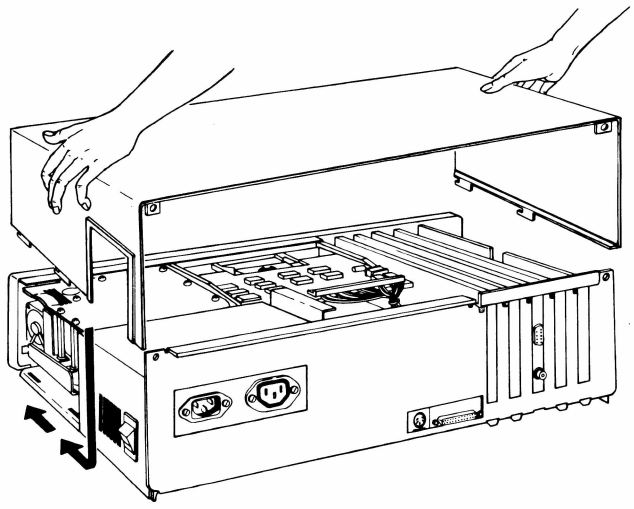
With the system unit cover open and power applied, the system unit board and diskette drive logic boards are exposed. Make certain that no tools, test probes, or other metallic items come in contact with any exposed components. Damage to the unit may result.

1. Reconnect the following:
   - Keyboard cable
   - Display unit signal cable
   - Display unit power cord
   - System unit power cord
2. With the system unit ON/OFF switch in the OFF position, plug the system unit power cord into an ac receptacle.
3. Place a diagnostics diskette in the left drive. Close the drive door.
4. Place the system unit ON/OFF switch in the ON position. Following the power-up self-test, the diagnostics menu is displayed.
5. Select the Overall Unit Test. At the beginning of the test, the system configuration table is displayed. Check the display to ensure the port number displayed is the port number you programmed on the option board.
6. You may check out the installation more intensively by selecting the Communication Port(s) Test from the diagnostics menu.

7. Place the system unit ON/OFF switch in the OFF position and turn the system unit so that the rear panel is facing you.

8. Disconnect all cords and cables from the rear of the system unit.

9. Replace the system unit cover by gently lowering it into place, and sliding it toward the front panel, as shown below.



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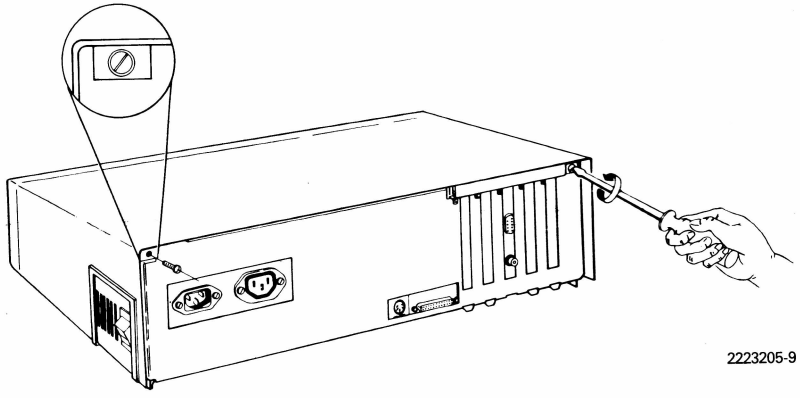
10. Replace the two screws which secure the system unit cover and tighten them.



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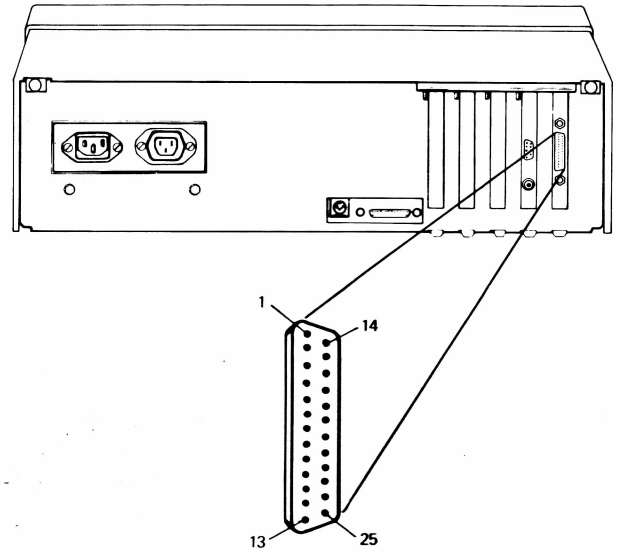
11. Reconnect the following:

- Keyboard cable
- Display unit signal cable
- Display unit power cord
- System unit power cord
- Any peripheral cables which you removed

This concludes the installation and checkout of the sync-async comm board option. If more extensive testing is required, refer to the *Texas Instruments Professional Computer Maintenance Handbook.*

The following figure identifies the signals at the RS-232-C connector.



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RS-232-C Connector Signals

Pin	Signal Name	Code
1	Chassis Ground	AA
2	Transmitted Data	BA
3	Received Data	BB
4	Request to Send	RTS/CA
5	Clear to Send	CTS/CB
6	Data Set Ready	DSR/CC
7	Signal Ground	AB
8	Data Carrier Detect	DCD/CF
9	No Connection	
10	No Connection	
11	Secondary Request to Send	SCA/CH
12	Secondary Clear to Send	SCF/CI
13	No Connection	
14	No Connection	
15	Transmitter Clock In	TXC/DB
16	No Connection	
17	Receiver Clock In	RSC/DD
18	No Connection	
19	No Connection	
20	Data Terminal Ready	DTR/CD
21	No Connection	
22	Ring Indicator	RI/CE
23	No Connection	
24	Ext Transmitter Clock	DA
25	No Connection	

Option Removal

PRELIMINARY STEPS

Before attempting to remove the option, complete the following steps.

1. If you wish to check the computer or option prior to removal, refer to the *Texas Instruments Professional Computer Operating Instructions* for checkout procedures using a diagnostics diskette.

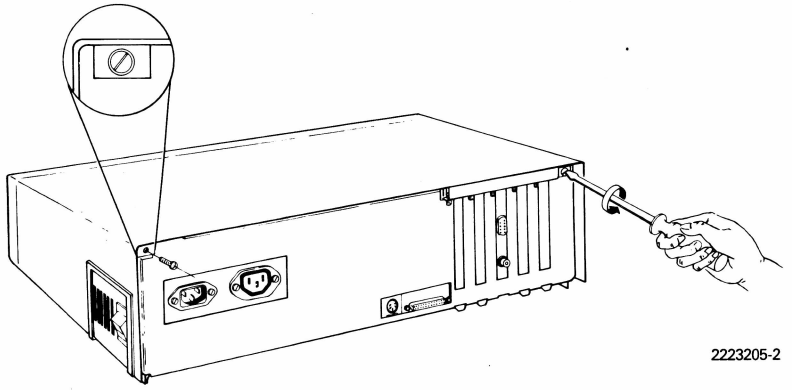
2. Place the system unit ON/OFF switch in the OFF position and remove the system unit power cord from the ac receptacle.

3. Disconnect the following:

   - System unit power cord
   - Display unit signal cable
   - Display unit power cord
   - Keyboard cable
   - Any other peripheral cables connected to the system unit

4. Remove the display unit from the top of the system unit and set it to the side. Set the keyboard and any other peripherals to the side, away from the system unit.

5. Turn the system unit so that the back panel is facing you. Remove one screw from each top corner using a flat-bladed screwdriver. See the figure below for the locations of the screws.



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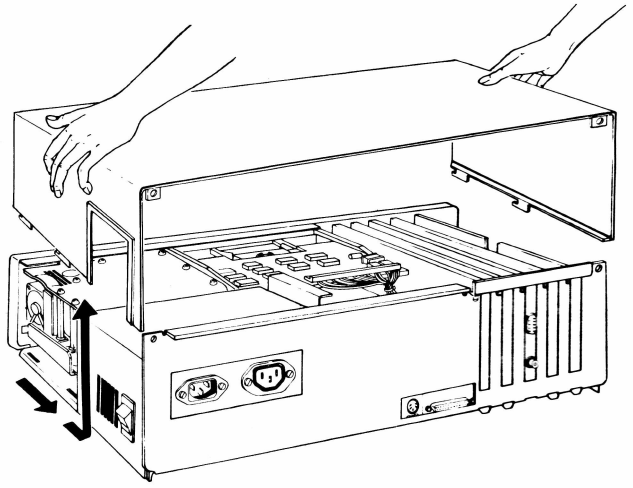
6. Remove the system unit cover by pulling it back approximately 13 mm (0.5 in), and then lifting it away from the system unit. Set the cover aside, out of the way.



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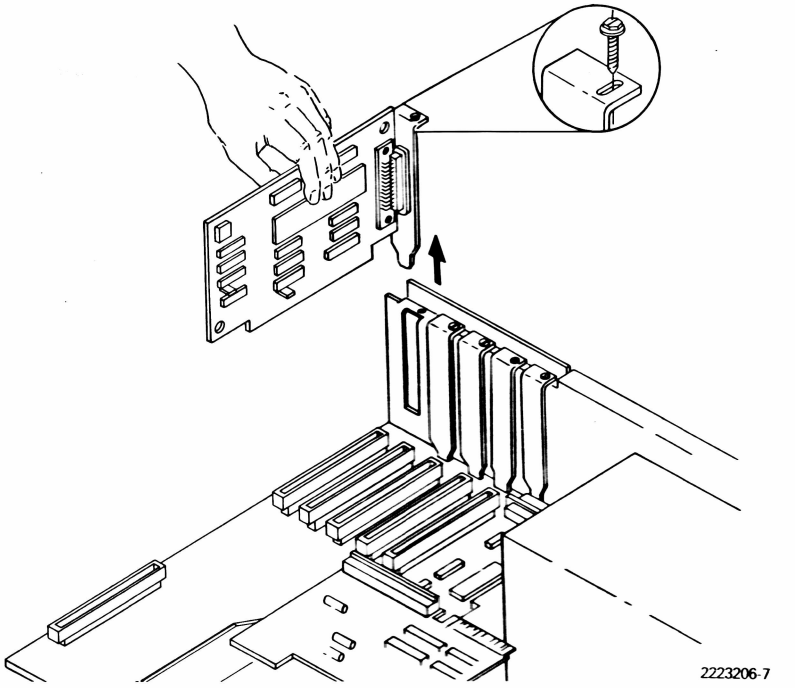
REMOVAL PROCEDURE

CAUTION

Static electricity can be destructive to static-sensitive components mounted on the sync-async comm board. Before touching or attempting to remove any of the printed wiring boards, be sure you are discharged of static electricity. This can be accomplished by momentarily touching any grounded object, or a metal-framed desk or table.

1. Using a flat-bladed screwdriver or 1/4-in nutdriver, remove the screw which secures the option plate assembly to the rear panel of the system unit. The screw must be retained for use in step 4.

2. Hold the sync-async comm board firmly and lift it straight up, out of the socket, as shown in the figure below. The board can be identified by the word "COMMUNICATION" marked on the end opposite the 25-pin D-type connector.



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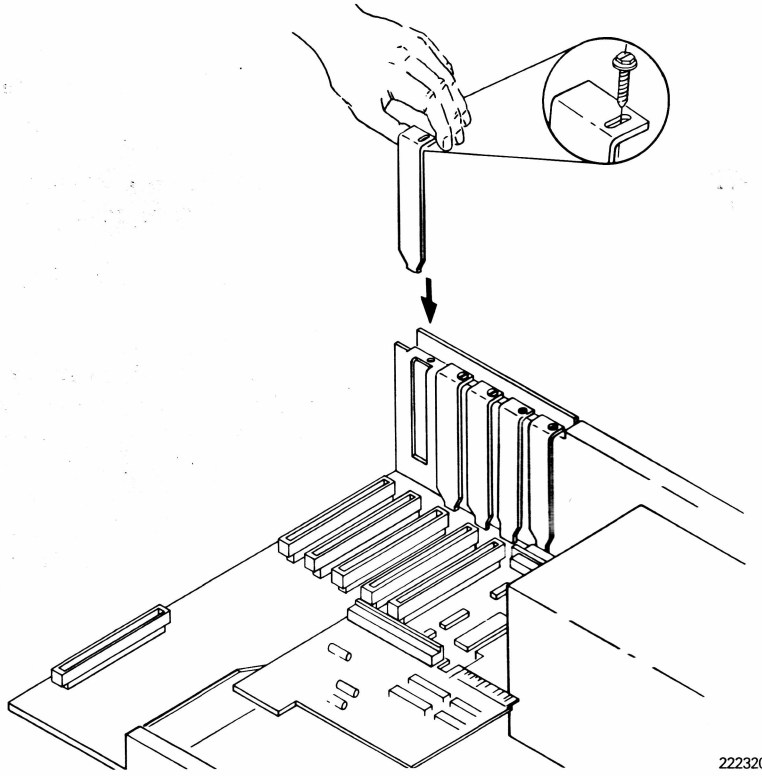
3. Place the board in an antistatic bag. If no antistatic bag is available, a sheet of aluminum foil may be wrapped around the board.

NOTE

If the sync-async comm board is being removed due to a fault, and a replacement board is being inserted, follow the installation instructions in Chapter 2. The address and interrupt jumpers must be configured for the correct port. Use the antistatic bag from the replacement board to store the board being removed.

4. If you are *not* replacing the sync-async comm board, you should place a blank plate (TI Part No. 2223033-0001) in the slot in the back of the system unit, and secure it with the screw removed in step 1.



2223206-8

CAUTION

With the system unit cover open and power applied, the system unit board and diskette drive logic boards are exposed. Make certain that no tools, test probes, or other metallic items are permitted to come in contact with any exposed components. Damage to the unit may result.

5. Reconnect the following:
   - Keyboard cable
   - Display unit signal cable
   - Display unit power cord
   - System unit power cord

   Do not plug the system unit power cord into an ac receptacle yet.

6. With the system unit ON/OFF switch in the OFF position, plug the system unit power cord into an ac receptacle.

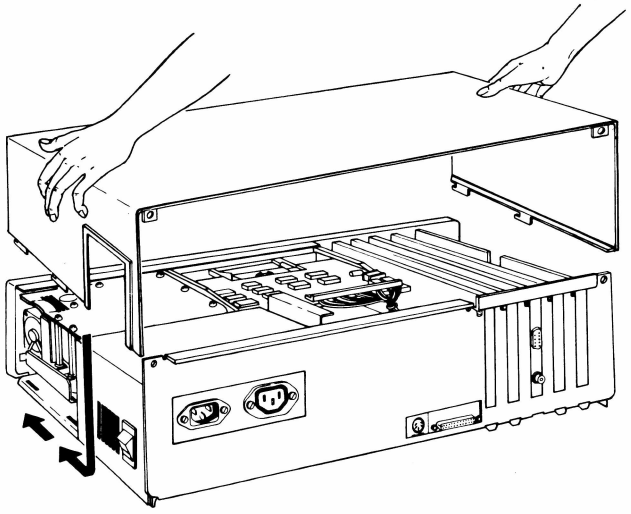
7. Place a diagnostics diskette in the left drive. Close the drive door.

8. Place the system unit ON/OFF switch in the ON position. Following the power-up self-test, the diagnostics menu is displayed. Select the Overall Unit Test. At the beginning of the test, the system configuration is displayed.

9. You may check out the installation more intensively by selecting the Communication Port(s) Test from the diagnostics menu.

10. Place the system unit ON/OFF switch in the OFF position. Remove all cords and cables from the back of the system unit.

11. Turn the system unit so that its rear panel is facing you. Replace the system unit cover by gently lowering it into place and sliding it toward the front panel, as shown below.



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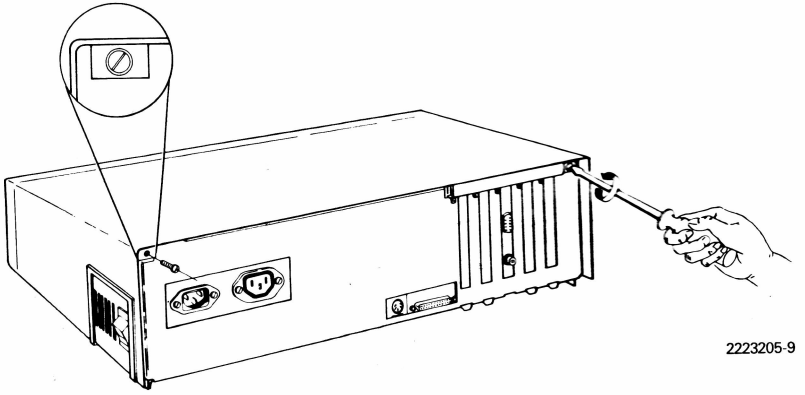
12. Replace the two screws which secure the system unit cover and tighten.



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13. Reconnect the following:

- Keyboard cable
- Display unit signal cable
- Display unit power cord
- System unit power cord
- Any peripheral cables which you removed

THREE-MONTH LIMITED WARRANTY TEXAS INSTRUMENTS PROFESSIONAL COMPUTER

THIS TEXAS INSTRUMENTS PROFESSIONAL COMPUTER WARRANTY EXTENDS TO THE ORIGINAL CONSUMER PURCHASER OF THIS PRODUCT.

WARRANTY DURATION

Texas Instruments Incorporated warrants this Professional Computer for a period of three (3) months from the date of original purchase from an authorized Texas Instruments Professional Computer Dealer.

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This Professional Computer is warranted against defective materials or workmanship. Expendable items such as fuses, light bulbs, etc. are not warranted. THIS WARRANTY IS VOID IF THE PRODUCT HAS BEEN DAMAGED BY ACCIDENT, UNREASONABLE USE, NEGLECT, IMPROPER SERVICE OR OTHER CAUSES NOT ARISING OUT OF DEFECTS IN MATERIALS OR WORKMANSHIP.

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During the three-month warranty period, the Professional Computer will be repaired or replaced with a new or reconditioned product of the same or equivalent model (at TI's option) when the product is returned either in person or by prepaid shipment to an authorized Texas Instruments Professional Computer Dealer or TI Service Center with a copy of the purchase receipt. Please first contact the Dealer from whom you purchased the Product to determine the exchange policy of the Dealer.

Texas Instruments strongly recommends that you insure the Product for value prior to shipment.

The repaired or replacement Product will be warranted for three months from the date of repair or replacement. Other than the postage requirement (where allowed by state law), no charge will be made for the repair or replacement of an in-warranty Product.

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